AIDAS: A Simulator to Teach Therapeutic Communication Skills

Grant Number: 5R44CA78062-03

Abbreviated Abstract

Aidas is a multimedia computer-delivered tutorial in end-of-life care targeted at physicians-in-training. It consists of two modules: Breaking Bad News and Advance Care Planning: An End-of-Life Case Study. Breaking Bad News teaches a step-by-step approach to breaking bad news. Advance Care Planning uses a case example to demonstrate the importance of end-of-life discussions and advance care planning. The computer software developed for this project allows the tutorials to be highly interactive and includes the ability to simulate role-playing. The Breaking Bad News module was tested on medical students in a randomized controlled study and was statistically significantly better than the control condition in teaching the material as measured by both a multiple choice test and an essay exam.

Primary Investigator

Corinne M. Mar, Ph.D.
Talaria Inc.
705 2nd Ave. Suite 501
Seattle, WA 98104
(206) 748-0443
Fax: (206) 748-0504
chabal@talariainc.com
Web site: www.talariainc.com

Dr. Mar is a PhD psychologist with special interests in pain management. She no longer works for Talaria Inc.

Research Team & Affiliations

Michael Hollander Ph.D., the original PI for this project, is no longer with Talaria; Cori Mar Ph.D., works for the University of Washington; Martha Davis PhD is in private practice; Brian Raffety is no longer with Talaria.

Total Budget

$750,000.00

Research Objectives

AIM 1: Create new modules based on educational objectives to:

a) Improve basic communication skills in order to facilitate patient disclosure, including asking open-ended questions, summarizing, encouraging expression of emotion, and expressing empathy.

b) Teach the assessment of patient information needs. Physicians need to present distressing information in a way that maximizes patients' retention and understanding by taking into account the patient's cultural background, educational background, language skills, psychological adjustment, and preference for personal control.
c) Teach physicians to facilitate adaptation and growth during terminal illness.
d) Teach the ongoing assessment of patient psychosocial adjustment and needs.
e) Teach patient-centered techniques for breaking bad news including how to cope with different patient responses to bad news including anger, denial, silence and fear.
f) Develop expert examples, fictional case study characters and scenarios.

AIM 2: Create a highly interactive learning environment through focused "just-in time" user assessment and intelligent tutoring capabilities.
AIM 3: Improve Aidas user interface and integrate graphics, etc.
AIM 4: Develop software to allow for better Internet distribution.
AIM 5: Include links from Aidas to Internet resources on death and dying.
AIM 6: Conduct formal evaluations.

Theory/Hypothesis

We hypothesized that the students would learn from both BBN computer module and the text control condition as measured by a comparison of their pre-test and post-test scores on both a multiple choice test (MCT) and essay exam. We further hypothesized that students who used the BBN module would learn more than those who read the Buckman chapters.

Experimental Design

Recruitment
Medical students were recruited from the University of Washington via e-mail, flyers, and word-of mouth. Ninety-eight students scheduled a study appointment; 92 showed up for their appointment (6 were no shows or cancellations), and all 92 completed the study. Participants were compensated $100 for approximately 4 hours of their time.

Control Condition
The control condition was designed to be similar in content to the experimental condition. Since much of BBN was based on Buckman (1994), we used the relevant chapters in this book as the control condition: Chapter 4: Breaking Bad News: A Six-Step Protocol and Chapter 5: The Patient's Reactions. Furthermore, since BBN is designed to supplement, not replace, classroom teaching or clinical in-service training, we wanted to compare it something currently available to students. This is why we did not create a (videotaped) lecture or our own written materials as the control condition.

Measures
An item pool of approximately 70 multiple choice items were created by three Ph.D.-level behavioral scientists after reviewing BBN and the Buckman chapters. From this item pool, the content development team created two 7-item multiple choice tests: Test A and Test B. Each item had four answer choices. Items were chosen to meet the following criteria: (a) clarity, (b) topic coverage, and (c) appropriateness for both the experimental and control condition (since these two conditions, while similar, were not identical). We also attempted to match the two tests in terms of items (difficulty and

areas covered). We created two versions of the test is because we thought any pre-test/post-test comparison using an identical test would inflate the estimation of the learning: students would be cued by the items to look for particular answers.

A similar process was used to create the essay exam questions. We designed the test to have at least one question about each of the five steps to breaking bad news. Because many physicians find that the hardest part of breaking bad news is to respond to patient emotions, we used several questions which asked the test-taker to respond to different emotions. The essay exam consisted of 11 questions: 9 were used on the pre-test and all 11 on the post-test. The two additional items on the post-test were very specific to the material in BBN and would have been especially difficult to answer before exposure to the content of the tutorial and control text.

Randomization
The medical students were randomized to either control or experimental condition and within each condition to either multiple choice test (MCT) A as pre-test or MCT B as pre-test (with the other test serving as the post-test). This randomization occurred within each medical student class to control for level of education (and indirectly, experience with breaking bad news). This randomization was done by assigning each student in each class in the order in which they were tested to one of the four conditions. Table 2 shows the results of this randomization.

Table 2: Results of Randomization

Year	Condition	MCT Pre-Test/Post-Test	
First 15	Experimental 7	A/B	3
		B/A	4
	Control 8	A/B	4
		B/A	4
Second 55	Experimental 24	A/B	12
		B/A	12
	Control 21	A/B	11
		B/A	10
Third 8	Experimental 4	A/B	2
		B/A	2
	Control 4	A/B	2
		B/A	2

Table 2: Results of Randomization (continued)

Year	Condition	MCT Pre-Test/Post-Test	
Fourth 24	Experimental 13	A/B	6
		B/A	7
	Control 11	A/B	6
		B/A	5
Total 92	Experimental 48	A/B	23
		B/A	25
	Control 44	A/B	23
		B/A	21

Procedure
Medical students responded by phone or e-mail to the study announcement to the study research assistant (RA). The RA explained the study, and if the students were still interested, scheduled them to be tested on-site at Talaria.

On-site, the study was explained to the participants, they were given an opportunity to ask questions, and then, if still interested, signed a written consent form. They were then administered the pre-tests (primarily by computer, although some were given via paper and pencil early on in the study). Subjects in the control condition were given Xerox copies of the two Buckman chapters and subjects in the experimental condition were assigned to separate computers with headphones and microphones. Control condition participants sat in the same room but instructed not to talk to each other. The experimental condition participants were in individual offices or cubicles so that they could not overhear other participants. All participants had two hours to view the materials. After this there was a short break and then the post-tests (multiple choice and essay) were administered.

Final Sample Size & Study Demographics

Ninety-two medical students were recruited from the University of Washington School of Medicine. Fifty-six percent of the participants were female. With regard to race, 17.4% were Asian, 4% were Black, 3.3% were Hispanic/Latino, 71.7% were White, and 3.3% identified themselves as biracial or other. Participant age ranged from 22 – 38 (mean = 26.38; SD = 3.34). Most of our sample (81.5%) were native English speakers. We attempted to recruit from all of the four classes at the medical school. Sixteen percent of the sample were first year medical students, 48.9% were second year, 8.7% were third year, and 26.1% were in their fourth year of medical school. Sixty five percent of the

sample had no previous training in breaking bad news. Of the 35% who had had some training in breaking bad news, many of them were among the fourth year students and had attended a one or two hour lecture on the topic.

Data Collection Methods

Computer based testing

Outcome Measures

Each essay question had its own grading scheme. The answer keys were developed by the project team after reviewing the students' answers. Points were given for each valid answer taught in the tutorial or book; and these points were added up for a total score for each essay question. For most of the items one point was given for each possible correct answer. For some items, there were both two point and one point answers. The two points were given for the most important information taught in BBN/Buckman and one point for less important information. For example, for the essay question "Studies have shown that most patients fail to retain up to 50 percent of the information given in a medical interview. How can the physician compensate for this when giving bad news?": two points were given to the answers "break up information" and "check for understanding" whereas only one point was given for "go slowly". For the questions that required a response to a dialog excerpt (see below for an example), there were 2 point answers, 1 point answers, and answers that resulted in subtracting a point. When responding to patient emotions, it is possible to say.

Evaluation Methods

We tested our hypothesis that both experimental and control groups would learn from the computer tutorial and Buckman chapters, respectively, using t-tests. We did a between-group comparison of those participants who took Test A as pre-test (prior to the intervention) and Test A as post-test (those who took Test A after the intervention). We did the same between group comparison for Test B and then a within group comparison of the pre-test Essay Exam with the post-test Essay Exam. All three outcome measures (multiple choice test A, multiple choice test B, and the essay exam) demonstrated a learning effect of the interventions as reflected in statistically significantly higher post- than pre-test score except for Test B for the control group. These statistically significant pre-test/post-test differences support our hypothesis and provides evidence that our measures were adequate to test for a condition effect.

Research Results

In the open-ended usability questions, most of students (43/48) in the computer condition indicated a clear preference for the tutorial over a book. Strengths of the tutorial mentioned by the students included the interactivity, the "real life" audio examples, and the practice/role plays. The majority of students (34/48) indicated a clear preference for the tutorial over a lecture. Reasons for this preference included its interactivity, ability to practice skills (role plays), the ability to go at their own pace, and that they could practice the exercises repeatedly.

The Advance Care Planning (ACP) tutorial was not formally tested. However, it was well-received and highly rated by the medical students and expert consultants who reviewed ACP. A third module, Spirituality in End-of-Life care was started and we plan to pursue additional funding in order to complete it.

Barriers & Solutions

Product(s) Developed from This Research

AIDAS